

OBSERVATIONS
ON THE
BRVMAL RETREAT
OF THE
SWALLOW;

WITH
A COPIOVS REFERENCE
TO PASSAGES RELATING TO THIS SUBJECT,
IN DIFFERENT AUTHORS.

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PREFACE

TO THE FIFTH EDITION.

SINCE the publication of the early editions of this tract, the habits and manners of animals have become a subject, in Natural History, of peculiar interest, from the discoveries of Drs. Gall and Spurzheim of Vienna, respecting the connection found to exist between the shape of the cranium and the instinctive propensities of the animal. The head of a swallow in this respect corresponds with the character of a migratory bird. The whole of this genus is endowed with an organization which, from analogy, we should infer as being capable of giving it a great power of local knowledge. It would be impossible in a few sheets to enter into the detail of this extensive and intricate subject; but the reader may consult the works written by Gall and Spurzheim jointly, and published at Paris, or the "Physiognomical System"

of Dr. Spurzheim, published in London in 1816*. The circumstance is merely mentioned here, as it affords additional proof of the migratory nature of the swallow tribe. Indeed, when we consider the number of birds of different genera known to change their habitations across the seas, it seems rather surprising that the migration of the swallow should even have been particularly doubted. The ancients, as will appear in the following pages, were acquainted with it, and the precise origin of the contrary opinion seems doubtful.

* According to the new discoveries, there is a systematic correspondence between the character and the brain in all known animals. Among birds, for example, the cuckoo wants the organ of attachment to its offspring, the falcon tribe have the organ of destructiveness, &c. &c. and so on of other species, according to their character. — Vide the *Physiog. Syst.* of Dr. Spurzheim, above alluded to.

PREFACE.

NATURAL HISTORY and the Sciences were not originally pursued by philosophers from a curiosity to acquire, or a desire to disseminate, the secret laws of the universe. Man is, nevertheless, an inquisitive animal, and seems, by his nature, to possess a restless solicitude about the objects with which he is surrounded, and a native desire of increasing his knowledge of things. Who can reflect on the extent of his memory, of his faculty of imagination, and of his power of communicating thought, and not suppose man constructed to enhance, by systematic inquiry, that knowledge, which, to a certain degree, must be the necessary result of sensation? And who can contemplate the variety observable in the intellectual characters of individuals, and not suppose that human pursuits would be dissimilar, and that original varieties of genius as well as accidental circumstances of situation, would direct human efforts to the

acquisition of various species of knowledge? But we cannot suppose that the different sciences had their beginning when society was organized as it is at present: when from the social division of labour, and the state of civilization, there are many to whom the conveniences of life are measured without toil, and who can follow their inclination in the pursuit of knowledge; and when it becomes the lot of others to exercise their minds only for a means of subsistence; for the arts and sciences seem, in a measure, necessary to social improvement, and appear to have arisen, from time to time, out of the wants of individuals, and to have kept pace with civilization.

In the infancy of society, it is probable that men, then only the wild inhabitants of forests and woods, employed their ken to discover and procure the various subjects of their immediate wants; and natural history was confined to a knowledge of such animals as were fit for food, and to be procured by hunting and fishing; and such as were formidable, and to be known, that they might be avoided; and to whose superior strength human ingenuity

and contrivance were to be opposed. But even in a more cultivated state of society, among the eastern nations of shepherds who lived wandering through verdant pastures with their flocks, to dwell wherever fountains poured out water, or trees afforded shade, science was still only subservient to the exigencies of nature, and natural history cultivated to discover and commemorate the useful qualities of animals. Some were edible, as sheep, goats, and many horned cattle. Others useful for guards, as the dog, who protected the folds; or the ichneumon and cat, the destroyers of rats and mice; whose troublesome insults engaged men in the pursuit of a more perfect acquaintance with their habits, together with numerous other tribes of noisome animals and insects, who invaded the dwellings of man, and interrupted his enjoyment. Many animals were monitors, who, by their appearance, announced the impending change of seasons. Thus the unexpected alterations of the weather were predicted by many birds and insects: and the garrulity of the crow and the thrush; the coming forth of worms on the ground, and of spiders on the walls;

the clamorous squalling of peacocks, and the frequent immersions of water fowl; indicated rain, and warned the shepherd and agriculturalist to prepare for bad weather. Nor were the periodical returns of the seasons less marked by many birds. Such was the crane flying the wintry tempests to gain more tranquil regions. Such was the turtle and the stork, the cuckoo and the nightingale; and the swallow, who returning was invariably found the harbinger of spring; and who, by an association of ideas, by which most human affections are regulated, when bestowed on trifling objects, was protected from injury, and received a superstitious respect, as being the companion of summer, the precursor of reviving nature.

The Botany of the early ages was alike restricted within the bounds of convenience with appetite: officinal herbs were cultivated, and the best fruits selected for repast. No traces are left of the cultivation even of beautiful flowers among the antients, unless eatable, or otherwise useful. The fields of the senex corycius procured him the riches and home-earned security so praised by the Mantuan

poët. There is little love of beauty discoverable in the accounts left of the gardens of Alcinoüs : nor is botanical science to be found in the knowledge of Solomon, who knew every herb, from the cedar of Letanon to the hyssop which groweth on the wall.

It was probably long after society was completely formed, when many felt that leisure which is caused by the distribution of labour, that the minds of men, ever restless and desirous of knowledge, engaged in the pursuit of natural history for its own sake. Aristotle, Aelian, Theophrastus, and Pliny, lived in a comparatively advanced state of civilization. Such men first drew forth natural history from the rude bed of rural oeconomy, and brought it into the area of dawning science, cultivated only in detached parts, according as necessity had engaged attention to certain animated beings. Just as a curious boy takes out a half ripe horse chesnut from its rough pod, pyeballed and ripened only in particular places, to be matured in time into its beautiful uniformity of colour, by the light atmosphere into which it is brought.

It is hoped that in time, by the modern arrangements and divisions of natural history, and the number of cooperators engaged in each department, it may ultimately acquire the beauty of a perfect system.

The following pages relate to a small branch of the said science, and contain some evidence on the question, Whether or no the genus *hirundo* is migratory?

At first sight birds engage our attention. In the beautiful tints of their plumage, they exhibit a greater diversity of lively colours than most other tribes of animals. We are pleased with the different melodies of their songs. In their manners and habits they show a diversity of character correspondent to their numerous dissimilar figures; and they are perpetually before our eyes while in pursuit of their food.

The pleasure arising from the study of natural history, has its source in the endless variety of forms exhibited by living beings, and in the energies of our minds exerted when we are engaged in discovering the purposes to which each is adapted. Birds are particularly calculated to afford this pleasure, from possessing in a

great degree that variety. And conformably we find they have most engaged the attention of mankind in past ages, before subsequent researches had developed the great sagacity of insects, and had facilitated the knowledge of them, and rendered them interesting by systematic arrangements, and a delineation of their generic and specific characters*.

Of the different habits of birds which naturalists have employed themselves to investigate, their local habitation or places of residence have been always a principal subject of their studies. Some remain all the year round in one part of the world, as the sparrow, the rook, the magpie, the owl, and most rapacious birds. Others change their habitations in the same country, in quest of food, and shift their quarters without travelling to any great distance; as the wagtail and the redbreast; and the wild geese and ducks, which come to the southward parts of our island at the approach of winter. Other birds cross the seas, and migrate to far distant countries, as the soland goose, the

* I allude particularly to the interesting accounts of Hübert on Bees, and on Ants.

gannet, the blackcap, the cuckoo, and various other kinds of land and water fowl. To these latter kinds the name of migratory has generally been applied*.

British migratory birds may be divided into those which inhabit our island in the winter time, as fieldfares, woodcocks, and many sea birds; and those which coming in spring spend the summer with us, as the cuckoo, the wry-neck, and the redstart: whether the few species of swallow which visit us in spring, and retire in autumn, are of this sort, or whether they are of a nature quite different, and become torpid during winter, is the question discussed in these sheets. The suspicion entertained by ornithologists, that they constituted an exception to the general mode of accounting for the annual disappearance and reappearance of birds, must have been founded on the fact of their having been occasionally discovered in a state of torpidity; which it is somewhat surprising that this curious circumstance did not lead to

* Some birds which are stationary in one country, as the kite for instance, migrate in another, as the same bird in Aegypt.

an earlier knowledge of their natural history. The more antient Greek bards seem to have considered the swallow as a bird of passage; while the Roman natural historians regarded it as laying torpid through the winter. It is more difficult to reconcile their opposite opinions and evidence, by supposition that some species migrate, and others lie torpid, than to suppose that accidental circumstances may sometimes cause the torpidity of individuals of all. The Greek word *χελιδων*, and the Latin word *hirundo*, certainly meant the swallow; but these terms do not define the species, and were probably used for swallows in general; though in some instances we may, by the description, discover the species which the author happened to have in his head when he was writing. There are several species of swallow known in distant parts of the world, which are unknown in this country; but the British species are known in almost all countries.

The present sheets merely exhibit such evidence from antient and modern writers on both sides of the aforementioned question, as I

have happened to collect, and such arguments as I am enabled to bring forward by a hasty examination of this subject. The paper was first printed in the year one thousand eight hundred and eight, and has lately got out of print. Since its former publication, I have examined several persons who have seen swallows many miles out at sea in spring and autumn, but whose accounts have not been accurate enough to render their publication of any use in determining this question: the narrators did not notice the particular species, and their accounts are only alluded to as affording corroboration of the opinion I have always entertained of the migration of these birds. This paper is republished, that it may excite attention to the subject, and may excite people to bring before the public such accounts, either of the noticed flights of swallows at sea, or of their discovery in a state of torpidity in the land, as may at present be only known to a few individuals.

OBSERVATIONS, &c.

OF the various tribes of birds which inhabit Europe, there is, perhaps, no one which has more attracted the attention of naturalists than the swallow; neither is there any one whose natural history is less understood. These birds make their first appearance, in Great Britain, early in spring; remain with us during summer, and disappear in autumn. The four species which inhabit this island, are also found, during summer, in almost every other region in Europe and Asia, where their manners and habits are pretty much the same as in this country, with this exception only, that they make their first appearance in spring somewhat earlier in the more southern parts of the Continent than in England

The distinguishing marks of this genus are:—bill small; mouth wide; head rather large in proportion to the bulk of the body, and somewhat flattish; neck scarcely visible; tongue short, broad and cloven; tail mostly forked; legs short; wings very long; flight rapid and continued. All birds of this genus feed upon insects which they catch in flying.

The chimney swallow, *hirundo rustica**, is the most common, as well as the best known, of them all; and for this reason is probably classed first by Linnaeus. Its length is about six inches, breadth from tip to tip of the wings, when extended, about twelve. The upper parts of its body and wings black; under parts whitish ash-colour; head black; forehead and chin marked with a red spot; tail very much forked. This bird generally arrives in this country somewhat sooner than the rest of this genus, usually making its first appearance before the middle of April†. It

* In ventriculo dissecto Scarabaeos inuenimus. In caminis nidificat.—*Raii Synop.* p. 71.

† The swallows of every species are few on their first appearance; afterwards increase in numbers; are

builds its nest in chimnies, at the distance of about a foot from the top, or under the roofs of barns and outhouses, has commonly two broods in the year, and generally disappears in the latter end of September, or beginning of October. Like the rest of this tribe, it is perpetually on the wing, and lives upon insects, which it catches flying. Before rain it may often be seen skimming round the edge of a lake or river, and not unfrequently dipping the tips of its wings or under part of its body into the water, as it passes over its surface*.

further multiplied by the accession of the young broods; and are diminished again before they wholly disappear.

* This was observed by many of the antient writers of natural history and philosophy. So Virgil:

Numquam imprudentibus imber
Obfuit, Aut illum surgentem vallibus imis
Aëriae fugere grues; aut bucula, coelum
Suspiciens, patulis captavit naribus auras;
Aut arguta lacus circumvolitavit hirundo,
Et veterem in limo ranae cecinere querelam.

Virg. Geor. lib. i. 377.

Which is imitated from Aratus:

Πολλάκι λιμναῖαι ἢ εἰνάλαι ὄρνιθες
Ἀπληστον κλύζονται ἐνιερμέναι ὑδάτεσσιν

The martin, or martlett, *hirundo urbica*, is rather less than the swallow, and is distinguishable at first sight from it, by the bright white colour of all the under parts of the body. This bird usually makes its first appearance early in May, though sometimes sooner, and leaves us towards the latter end of October. It builds under the eaves of houses; and in crags of rocks and precipices near the sea, and has oftentimes three broods in the year; its nest is curiously constructed, like that of the swallow, with mud and straw, and lined with feathers on the inside*.

*Η λίμνην περὶ δὴτὰ χειλιδόνες αἰσσοῦσαι
Γαστέρι τύπλουςαι αὐτὰς εἰλυμένον ὕδωρ.

Arat. Dios. 210.

* *Hirundines luto (nidum) construunt; stramento roborant. Si quando inopia est luti, madefactæ multa aqua, pennis puluerem spargunt. Ipsum vero nidum mollibus plumis floccisque consternunt tepefaciendis ouis, simul ne durus sit infantibus pullis. In fœtu summâ æquitate alternant cibum. Notabili munditiâ egerunt excrementa pullorum, adultioresq. circumagi docent, et foris saturitatem emittere. Alterum genus hirundinum est rusticarum et agrestium, quæ raro in domibus, diuersos figurâ, sed eâdem materiâ, confingunt nidos, totos supinos, faucibus porrectis in*

The swift, *hirundo apus*, is the largest of the genus, being seven inches in length, and nearly eighteen in breadth, when its wings are extended*. It is of a sooty black colour, with a whitish spot on its breast. It arrives in this country towards the middle of May, and departs about the middle of August†. It builds in holes of rocks; in

angustum, vtero capaci, mirum quâ peritiâ et occultandis habiles, et substernendis molles.—*Plin. Hist. Nat. lib. x. cap. 33.*

Sub tectorum suggrundiis inque fenestris nidificat, non in caminis, nec nidum construit hemisphæricum, et superiore parte totum apertum ut *hir. domestica*, sed ovatum, superne tectum, rotundo tantum foramine ad latus relicto, per quod ipsa intrat et exit.—*Raii Synop. p. 71.*

* Ob alarum longitudinem et brevitem pedum humo aegrè se tollere potest.—*Raii Synop. p. 72.*

† It is remarkable, that most countries have a similar proverb relating to the swallow's accidental appearance before its usual time. The Greeks have *Μία χειμῶν ἐπὶ τῷ ποταμῷ*; the Latins, *Vna hirundo non facit ver*; the French, *Une hirondelle ne fait pas les printemps*; the Germans, *Eine schwalbe macht keinen frühlung*; the Dutch, *Een swaluw maakt geen zomer*; the Swedes, *En svals gör ingen sommar*; the Spanish, *Una golondrina no hace verano*; the Italians, *Una rondine non fa primavera*; and the English, *One swallow doth not make a summer.*

ruined towers, and under the tiling of houses. It has only one brood in the year.

The bank or sand martin, *hirundo riparia**, is the smallest of the genus, and is of a dusky brown colour above, and whitish beneath. It builds its nest in holes, which it bores in banks of sand, and is said to have only one brood in the year.

There is, perhaps, no subject in natural history which has more engaged the attention of naturalists, in all ages, than the brumal retreat of the swallow; neither is there any subject on which more various and contrary opinions have been entertained. Some have supposed that they retire at the approach of winter to the inmost recesses of rocks and mountains, and that they there remain in a torpid state until spring. This was certainly the opinion of Pliny, who says, *Abeunt et hirundines hybernis mensibus; sola carne*

* Ita vocant in riparum cauis nidificantes. — *Plin. Hist. Nat. lib. xxx. cap. 4.*

In riparum foraminibus nidificat. — *Raii Synop. p. 72.*

vescens avis ex iis quae aduncos ungues non habent ; sed in vicina abeunt, apricos secutae montium recessus, inuentaеque iam sunt ibi nudae atque deplumes. Lib. x. cap. 24.*

But notwithstanding that we have the authority of so learned, though at the same time so credulous, a naturalist as Pliny, it seems almost absurd to suppose that the swallow differs so much in its nature from other birds, as we do not find any material difference either in its external or internal formation. Others have conjectured that these birds immerse themselves in the water at the approach of winter, and that they remain at the bottom in a state of torpidity, until they are again called forth by the influence of the vernal sun. Linnaeus was probably of this opinion, when he said, *hirundo rustica habitat in Europae domibus intra tectum,*

* Some editions have *Africos*, instead of *apricos*. The latter however is certainly the best, for Pliny would surely have applied the adjective to *montium*, and not to *recessus*. Thus he would have said, *Africorum secutae montium recessus*; or else, *Africae montium secutae recessus*.

vnaque cum vrbicâ autumnô demergitur, vereque emergit. But most likely in this, as in some few other cases, he gave credit to the fabulous assertions of others, without examining into the truth of them himself*. There are several instances on record of their having been found in such situations, clustered together in great numbers, and that, on being brought before the fire, they have revived and flown away. But, unfortunately, few of these accounts have been well authenticated; and the celebrated John Hunter has clearly proved, from various experiments which he himself made, that these birds cannot continue long under water without being drowned†. I do not mean to deny that swallows may have occasionally been found under water; for it is well known that they have:

* It has been doubted by some, whether Linnaeus meant any more, by *demergitur* and *emergit*, than that the swallow was hid, and came forth again.

† The experiments of Mr. Pearson, related in Bewick's Birds, show, I think, that the swallow has no great propensity to become torpid in winter, unless operated on by some other circumstance than merely the time of the year.

and this probably has given rise to the absurd notion entertained by some, that the whole of the species winter in that element. But I should certainly attribute their being found in such situations to mere accident; and I think it might have been occasioned by some such circumstance as the following:

It is well known that, towards the latter end of autumn, swallows frequently roost by the sides of lakes and rivers*; we will suppose, therefore, that a number of these birds had retired to roost on the banks of some shallow and muddy river at low tide, and that they had been induced by the cold to creep among the reeds or rushes which might grow in the shallow parts of the river, and that while in this situation, driven into a state of torpidity by the cold, they had been overwhelmed, and perhaps washed into the current, by the coming in of the tide†.

* This circumstance may have contributed to induce some to believe that they go into the water.

† There have been occasional instances of other birds besides swallows having been found in a state of torpor during winter. I think I recollect a cuckoo being found in such a state.

Having thus accounted for the manner in which swallows might chance to get into the water, it remains to be considered by what means they may have been sometimes taken out alive. Let us suppose, therefore, that some fishermen, as is very likely to be the case, had availed themselves of the coming in of the tide to catch fish, and that the swallows, which we have before supposed to have been carried into the current, coming in contact with their nets, were consequently drawn out of the water by them, and, not having been long under water, were not completely drowned.

There are several other circumstances which seem to favour the opinion, that these birds remain concealed during winter in this country. Among others, the most striking is, that swallows, *hirundines rusticae*, as well as martins, *hirundines urbicae*, have sometimes appeared very late in autumn, a considerable time after they were all supposed to have taken their departure*.

* Of this we have several instances: Bewick, in his *History of British Birds*, Introduction, p. xvii. takes notice of having seen a straggling swallow so late as the end of October; and White, in his *Natural*

Again, as I have before had occasion to observe, they have sometimes been taken out of the water, in winter, in a torpid state, not only out of rivers, but also out of lakes and stagnant pools, and even out of bogs*. They have likewise been found concealed in the crevices of rocks, in holes of old decayed trees, in old ruined towers, and under the thatch of houses†.

History of Selborne, mentions having seen a house martin flying about in the month of November. Montagu, in the Supp. to Orn. Dic. mentions having seen many swallows and martins as late as November 5, 1805. To which I may add, that, in the year 1804, I saw several, both martins and swallows, flying about in the neighbourhood of London, as late as October the 19th. I have since frequently seen them later than that time.

* For further particulars relative to the torpidity of swallows, see *Miscellanies by the Hon. Daines Barrington*, page 225 and sequel; also *Buffon, Hist. Nat. des Oiseaux*, 4to. Paris, 1780, *Plan d'Ouvrage*, p. xiii.

† A great many sand martins' holes have been opened in winter, and nothing has been found in them but old nests.—See *Phil. Trans.* vol. li. p. 463.

In October, 1810, I opened several sand martins' holes near Dorking in Surry, and found in one of them a variety of very small bony substances, which might be part of large insects, mixed with dirt.

From the consideration of the above facts alone, without making any further inquiry into the subject, many persons have concluded that the whole tribe always winter in similar situations. It seems, however, much more probable that those birds, which may have been found in a state of torpidity, as above described, had, owing to some accident, been hatched later in the year than ordinary, and that consequently they had not acquired sufficient strength to undergo the fatigue of a long journey upon the wing, at the time when the migration of the rest of their species took place. It is very probable that many of these, in order to shelter themselves from the inclemency of the weather, may have retreated to holes of rocks, and other recesses, where, from cold and hunger, they may have sunk into a state of torpidity*. Others, for the

* See Montagu's Ornithological Dictionary, under the word *martin*.

It is by no means improbable that very cold and frosty weather in spring, may sometimes drive the swallow, just arrived, into some snug retreat, where it may remain until the warm weather returns.—See *Phil. Trans.* vol. lxxv. p. 259.

same reason, may have crept among the weeds, which grow by the sides of rivers and ponds, where they may have been overwhelmed by the increase of the water, occasioned by the heavy rains which often happen towards the end of autumn, and some, which may not have been long immersed, may probably have been restored to life, when brought into the sunshine, or before a fire.

But that the chief part of each species migrate, is so well established by a multitude of corresponding facts, that it seems almost an absurdity to doubt of it. In the first place I would observe, that if these birds lay concealed in winter, in the same countries which they inhabit in summer, they would probably make their first appearance in spring, in mild weather, and would appear sooner in early than in late seasons, which is quite contrary to experience. For several years past I have observed that chimney swallows have appeared first in cold weather. I have sometimes seen them as early as April the 2d, when the mercury in the thermometer has been below the freezing point. On the other

hand, I have often taken notice, that during a continuance of mild weather for the space of a fortnight, in the month of April, not so much as one swallow has appeared.

It is a well known fact, that the swallow, like most other birds of passage, appears earlier and departs later in the southern than in the northern parts of Great Britain; and it must have been observed, by every one who is attentive to natural history, that towards the latter end of September, swallows, *hirundines rusticae*, as well as martins, *hirundines urbicae*, congregate in great numbers, and are frequently seen sitting on the tops of houses, and on rocks near the sea. These meetings usually continue for several days, after which they suddenly disappear*.

Swifts, *hirundines apodes*, also begin to assemble in large bodies previous to their departure, early in July: their numbers

* Swallows seldom perch on trees, except in autumn, shortly previous to their disappearance, and they then choose dead trees in preference. I have known them sit on trees earlier in summer, when the weather has been very cold.

daily increase, and they soar higher in the air, with shriller cries, and fly differently from their usual mode. Such meetings continue till towards the middle of August, after which they are seldom seen.

Sand martins, *hirundines ripariae*, likewise flock together in autumn. Some years ago they are said to have appeared in great numbers in London and its neighbourhood.

From all the abovementioned circumstances, as well as from the great length of the wings, in proportion to the bulk of the body, of all this genus*, it must appear evident that swallows are birds of passage: for it is hardly to be supposed that they would assemble together merely to hide themselves; on the contrary, it is most probable that, were this the case, each individual bird would seek a hiding place for itself†.

* "If we calculate the velocity of this bird on the wing, and that it can and does suspend itself in the air for fourteen or fifteen hours together in search of food, it cannot fly over a space of less than two or three hundred miles in that time."—Montagu *Ornith. Dict.*

† If the swift *hirundo apus* lay torpid during the whole of its absence, it must sleep for a continuance

It will be proper now to examine the accounts of mariners and others, who have seen these birds on their passage, many hundred miles out at sea, and on whose ships they have alighted to rest, almost exhausted with fatigue and hunger; by which means we may be enabled, in some measure, to determine to what quarter of the globe they retire, when they leave Europe in autumn.

Adanson, in his Voyage to Senegal, relates, that on the sixth of October, being about fifty leagues from the coast, between the island of Goree and Senegal, four swallows alighted on the shrouds of his ship, which he easily caught, and knew to be European swallows. He adds, that these birds never appear at Senegal, but in the winter season, and that they do not build nests as in Europe, but roost every night on the sand by the sea shore. It is much to be lamented that Adanson, who was a naturalist, did not mention of what species these birds were. It is, however,

of above eight months, and would afford an instance of such a preponderance of torpidity over animation, as occurs in no other known animal.

most probable, as they were seen at Senegal on the sixth of October, that they were chimney swallows, *hirundines rusticae*, as martins, *hirundines orbicae*, seldom leave their summer haunts till after that time; and swifts, *hirundines apodes*, usually depart before the twenty fifth of August. With respect to bank martins, *hirundines ripariae*, it is very unlikely that Adanson should have mistaken them for chimney swallows, being distinguishable at first sight from the three abovementioned species, by their inferior size.

Latham, who quotes Adanson's account, evidently understood the birds in question to be chimney swallows, and supposes Senegal and the adjacent parts of Africa to be the winter residence of this species. The writers of *Le Nouveau Dictionnaire d'Histoire Naturelle*, published at Paris in 1803, seem to have been of the same opinion. *Celles (les hirondelles) de cheminée*, say they (vol. xi. p. 18), *vont jusqu' au Senegal, ou elles arrivent vers le 9 Octobre, et en repartent au printems. Il n'est pas rare dans les migrations d'en voir en mer, qui lorsqu'elles sont trop fatiguées se reposent sur*

les vergues des navires; et parmi elles, on a reconnu celles qui habitent parmi nous.

Another account, which affords additional proof that swallows are birds of passage, though it will not assist us in discovering to what part of the world they go, is that of Sir Charles Wager, first lord of the admiralty; who relates, that in one of his voyages home, as he came into soundings of our channel, a great flock of swallows settled on his rigging: every rope was covered with them: they hung on one another like a swarm of bees: the decks and carvings were filled with them: they seemed spent and famished, and, to use his own expression, were only feathers and bones; but, recruited with a night's rest, they resumed their flight in the morning.

Peter Collison, F. R. S., in a letter to the Hon. I. T. Klein, mentions, that a similar circumstance happened to Captain Wright, in a voyage from Philadelphia to London; the particulars of which, it appears, the captain neglected to relate*.

* Collison adds, "I have for many years been very watchful in taking notice of the times when the

If the above accounts may be depended on (which I can see no reason to doubt, since the relators could have no interest in supporting them if they were false), it must appear evident that the birds in question, at the time when they were seen at sea, as above described, must have been on their passage from some distant country; there being no other apparent cause for their appearing at any considerable distance from land.

Again, if swallows uniformly appear in Senegal when they disappear in almost every country of Europe, and at no other time; and if they regularly appear in most parts of Europe when they disappear in Senegal, and at no other time, (which, according to Adanson, is the case,) it seems reasonable to conclude, that Senegal and

swallows leave us, and I think I have twice actually seen them taking their flight. At two different years. (on the 27th and 29th of September) walking in my garden at noon, on very sunshiny days, and looking up into the sky, I distinctly saw an innumerable number of swallows, soaring round and round; higher and higher; until my eyes were so pained with looking at them, that I could no longer discern them."—See *Phil. Trans.* vol. i. p. 461.

other warm regions of Africa, and the cold and temperate countries of Europe and Asia, are alternately inhabited by the same birds.

This will appear more evident when it is considered that the same causes which operate to drive them away from the northern and temperate nations of Europe and Asia, namely, rigorous weather, and scarcity of food in winter, do not exist in Senegal and other tropical countries, where the weather is constantly warm, and the air always abounds with winged insects.

It has often been said, in objection to the migration of swallows, that, considering the number of these birds which annually inhabit Europe, if all were to cross the ocean twice a year, they would oftener be seen by mariners on their passage, than they appear to be*. But it seems to me very un-

* It does not appear, upon inquiry, that these birds are so seldom seen at sea, as, from the scarcity of published accounts, one might be inclined to imagine. I have often heard seamen say, that they have seen swallows many hundred miles from land, during

likely that they should very frequently be seen ; because, from the extraordinary length of their wings, it is probable they perform their aerial journies at too great a height to be discerned ; and most likely, those which have occasionally alighted on ships, in their way, had, owing to stormy weather, contrary winds, or some other casualty, been too much fatigued to proceed without resting. And I think it further probable, that great numbers of these birds, labouring under the above disadvantageous circumstances, annually fall into the sea and are drowned. For, as White observes, in his Natural History of Selborne, unless these birds be very short lived indeed, or unless they do not return to districts where they have been bred, they must undergo some great devastation somehow or somewhere ; because the numbers that return in spring bear no manner of proportion to those which retire in autumn.

I shall conclude my observations, by taking some notice of what several ancient and

their voyages. A friend of mine, lately returned from the East Indies, says, he has frequently met with these birds in his passage thither.

modern writers have said respecting the swallow; concerning the winter retreat of which, there seems to have been two different opinions among the ancients, and three among the moderns.

The prophet Jeremiah takes notice of the coming of the swallow, in common with that of several other known birds of passage*: *Yea the stork in the heavens knoweth her appointed time; and the turtle, and the crane, and the swallow, observe the time of their coming.* Chap. viii. 7.

The poet Anacreon not only notices the migration of this bird, but supposes Aegypt to be the place of its destination†.

* If the reader should doubt whether the Hebrew word which we render *swallow*, and the translators of the Septuagint χειδών, originally signified the bird to which we now give that name, he may consult Bochart's *Hieroicoicon, sive de Animalibus Sacrae Scripturae*. Fol. London, 1663. Vol. ii. p. 59.

† Σὺ μὲν φίλη χειδών,

Ετησίη μολοῦσα,

Θέρει πλέκεις καλὴν

Χειμῶνι, δ' εἰς ἄφαντος

*H NEIAON ἢ πὶ MEMΦIN.

Carm. 33.

Barnes, the editor of Anacreon, in a note on this passage, says, "Nonnulli putant (hirundines) in sco-

Herodotus observes, that kites and swallows are found in Aegypt all the year round*. Prosper Alpinus informs us, that there are two kinds of swallows found in Aegypt; that one of them is a bird of passage; but that the other, which, from the description he has given of it, appears to be the swift, *hirundo apus*, remains there all the year†. Aristotle takes notice of the

pulis, aut in truncis arborum sopitas latere, totâ hyeme, ut Kircherus in mundo subterraneo; Ita Ovid. Cum glaciuntur aquae, scopulis se condit hirundo. Alii illas aliquandò sub ipsis aquis, in fundo, latere; ut Pecklinius in libro de aëris et alimenti defectu et vitâ sub aquis." The above quoted hexameter line is not in Ovid's works, it must therefore have been wrongly quoted from the Latin Anthologia.

* *Ιαλινοὶ δὲ καὶ χελιδόνες δι' ἅλης ἢ ἀπολιπυσι.*
Lib. ii. cap. 22.

Possibly some of the species remain all the year in the warm regions of Africa and Asia, while others annually migrate into the more northern parts of the world, where they are very useful in clearing the air of innumerable insects, with which it abounds in summer.

Kites (*Ιαλινοὶ* vel *Ιαλινοί*) are generally believed to migrate into Aegypt in great numbers in autumn.

† Hirundines duplicis generis ibi observantur; patriae scilicet, quae, numquam ab Aegypto discedentes ibi perpetuò morantur; atque peregrinae; hae sunt

departure of swallows, but says nothing further concerning their brumal residence, than that they do not winter in Greece*.

Isidorus mentions their passage across the sea, and supposes that they winter in some distant country †.

Pliny, as I have before observed, asserts, that they withdraw themselves in autumn to the sunny recesses of mountains, where they are found in winter without feathers. Neither does he appear altogether singular in this opinion; Claudian alludes to swallows being found dead in the hollow trunks

nostratibus omninò similes; patriae vero toto etiam ventre nigricant. — *Hist. Aegypt.* vol. i. p. 198.

* Απαίρου δὲ, &c. καὶ ἡ χειμαρύνει, καὶ αἱ χελιδόνες, καὶ αἱ τρυγόνες. — *Hist.* lib. viii. cap. 12.

Aristotle in another place, as Gesner observes, mentions the swift, ἄπους, as being seen at all times of the year; and notices the resemblance of this bird to the swallow, χελιδών, which, with many other passages that the reader may find and consult by referring to the index at the end, leave no room to doubt that the ἄπους was our swift, *hirundo apus*. I do not know, however, that in any part of Greece this bird remains all the year. The account, however, seems to correspond with that of Prosper Alpinus above cited.

† Maria transuolat (hirundo) ibique hyeme commoratur. — *Isidorus*,

of trees in winter*; and it is remarkable there are three islands over against Mount Taurus, called by the ancients *χελιδόνιαι*, and a promontory called *χελιδόνιον*; because swallows were supposed to hide themselves there in winter†. The west wind likewise, from blowing in the spring, about the time of the swallow's arrival, was denominated Chelidonian‡.

I now come to the opinion of more modern writers on this subject, who seem to have been as undetermined with respect to the winter retreat of the swallow, as the ancients.

It appears that Olaus Magnus, arch-

* Vel qualis gelidis plumâ labente pruinis
Arboris inmoritur trunco brumalis hirundo.

Claud. in Eutrop.

There is a curious Latin hexameter poem, published many years ago in Holland, on the occasion of a swallow being found in a hollow tree; a copy of which is in the library of Sir Joseph Banks.

† Quae contra tauri promontorium importunae
naugantibus obiacent, Chelidoniae nominantur.—
Pomp. Mela, de Situ Orbis, ii. 9. 27.

‡ Oppian calls the swallow,

Μήτηρ ἑαρινὴ ζεφυροῦ προταγγελοῦ ὄρνις.

And Horace solicits the return of his friend,

Cum zephyris, si concedes, et hirundine prima.

bishop of Vpsala, was the first who broached the opinion, that these birds spent the winter under water. This credulous man assures us, that they are frequently found clustered together in masses, at the bottom of the northern lakes, and that they creep down the reeds in autumn to their subaqueous retreats*.

Klein was decidedly of opinion, that chimney swallows wintered in the water, and sand martins in their holes in the banks of rivers, etc.†

Linnaeus asserts, that chimney swallows and martins immerse themselves in the water in winter; but supposes that swifts lay concealed in holes in church towers, and other secure places‡.

* "That the good archbishop" (says Pennant) "did not want credulity in other instances, appears from this, that having stocked the bottoms of the lakes with birds, he stores the clouds with mice, which sometimes fall in plentiful showers on Norway and the neighbouring countries."—See *Gesner. Icon. An.* 100. The immense number of lemmings, *mures lemni*, which, at uncertain periods, suddenly make their appearance in various parts of Norway, Sweden, and Lapland, has probably given birth to this strange conjecture.

† See *Klein's Hist. Avium*.

‡ *Hybernatur in templorum foraminibus.*

Pontoppidan gives it as his belief, that swallows spent the winter in the water; and asserts, that they are frequently taken out of that element in large masses, by fishermen, in Norway and other northern countries*.

Daines Barrington supposed that the chimney swallow remained during winter immersed in water; but that the martin lay hid in cavities of rocks, old towers, and other secluded retreats: in support of which opinion he adduces a great number of facts†.

Bewick expresses himself decidedly in favour of migration. After having made a few remarks on the occasional torpidity of these birds, he adds: "On the other hand, that actual migrations of the swallow tribe do take place, has been fully proved by a variety of well attested facts, most of which have been taken from the observations of navigators, who were eye witnesses of their flights, and whose ships have sometimes afforded resting places to the weary travellers. To the many on record we shall add

* *Pontop. Hist. Norway.*

† *Barrington's Miscell.* p. 235, and sequel.

the following, which we received from a very sensible master of a vessel, who, whilst he was sailing early in the spring, between the islands of Minorca and Maiorca, saw great numbers of swallows flying northward, many of which alighted on the rigging of his ship in the evening, but disappeared before morning*."

Pennant believed that the bulk of each species migrated; but admits that some individual birds may have occasionally been found torpid in winter: in which opinion Latham, and White, and in short most modern naturalists, appear to have concurred.

In fine, the result of my researches on this subject has convinced me, that the swallow is a migratory bird, annually revisiting the same countries in common with other birds of passage; and that the bulk of each species betake themselves to some warmer climate when they disappear in autumn. There is sufficient evidence on record to establish the migration of birds of this genus; at the same time that, from the inaccurate observation of the

* *Bewick's British Birds*, vol. i. Introduction.

witnesses, it is difficult, in most cases, to determine exactly the species alluded to. But while it is pretty certain that the greatest number of swallows migrate, it is not impossible that many individuals of each of the species may be concealed during winter near their summer haunts. Nature may have provided the swallow with this power of accommodating itself to accidental circumstances; and have enabled it, when hatched late, or otherwise prevented from joining the annual emigration, to sleep in security through the season when it could not obtain its proper food abroad; and to be revived again on the return of warm weather and of food. On the other hand, as there exists no proof of the vernal reanimation of torpid swallows, it is possible that their torpidity, perhaps induced merely by cold and hunger, may, unless they be roused by accident before it has gone on too long, be a fatal period to their existence. The cases of the discovery and revival of such torpid swallows are surely interesting; and future investigations may, perhaps, throw some light on the destiny of those left

undisturbed. It is to be hoped, that the increasing knowledge of the Linnaean classification will produce, in future, a more explicit description of the particular species, when any cases of the kind are published, and that persons who may meet with them will communicate them through the medium of the Philosophical Magazine, or some other of the public prints. The subject certainly deserves the accurate attention of the students of natural history.

It may be said, that some of the passages cited in this work may relate to species of the swallow which are not found in Great Britain. That this is seldom, if ever, the case, I am persuaded; not only because our four species also inhabit Italy and Greece, but because few of the other species of this genus are found in those countries in which the authors lived whose works have been cited. The index at the end, however, certainly refers to many species. That the reader may be enabled to judge of this for himself, I subjoin the following short account of the other species.

1. *Hirundo Esculenta*. An inhabitant of China, and is celebrated for its esculent nests.

2. *Hirundo Purpurea*. Wholly of a violaceous colour, with a forked tail. Inhabits South America, lives about houses, and is said to warn the chickens of the approach of rapacious birds.

3. *Hirundo Subis*. Of a bluish black colour; is an inhabitant of Hudson's Bay.

4. *Hirundo Senegalensis*. Of a shining black, the under parts reddish: an inhabitant of Senegal.

5. *Hirundo Iapera* (Maregr. brag. 205); upper parts black, under parts white; inhabits America.

6. *Hirundo Pelasgica*. Also an American species; inhabits chimneys, like the *Hirundo Rustica*.

7. *Hirundo Melba*. Brown, the under parts white; inhabits the Fretum Herculeum.

8. *Hirundo Pratincola*. This large species is probably the one alluded to by Scalliger, when he said he saw a swallow of the size of a turtle dove. It is brown above and white below, with a blackish line about its neck. Inhabits the coasts of the South of Europe. Two specimens have been seen alive in England, an account of which may

be found at the end of the last volume of the Transactions of the Linnaean Society.

The Fauna Suecica, and also Brown in his Jamaica, class the *Caprimulgi* *Europeus* and *Americanus* among the swallows.

I might add the sea swallows; *Sterna hirundo*, *Sterna minuta*, the *Sandwich tern*, and others of the genus. Some of these may have been mistaken by some writers for swallows. But the accounts which I have received of swallows being seen at sea, are explicit enough to determine them not to be *terns*, though they are not satisfactory as to what species of swallow.

APPENDIX.

*Extract from a Journal of Natural History,
showing the First and Latest Appearance of
Swallows, compared with other Phaenomena,
during several Years, at Clapton, near London.*

FIRST APPEARANCE OF THE SWALLOW IN 1805.

Hirundo rustica first appeared April 5, but not numerous till the end of the month.

FIRST APPEARANCE OF MIGRATORY BIRDS IN 1806.

Hirundo rustica first appeared at Woodford, in Essex, April 2, and became common towards the latter end of the month.

Hirundo urtica, first seen April 26; long before it became common.

Lynx torquilla, first heard and seen May 1.

Cuculus canorus, the cuckoo, first heard May 3.

Motacilla atricapilla, seen May 8.

Motacilla luscini, the nightingale, heard May 18.

Swallows of both kinds became numerous.

* *Motacilla rubetra*, the whinchat, observed May 20.

* Probably appeared much sooner, though not observed: its migration in England, is only from northward to southward; like the stonechat *Motacilla rubecola*, it remains all the year in the more southern parts of England.

Through this evening, an unusually great number of flies, flying in a vortex, were observed in the garden till late in the evening. The *iris lurida* in flower. The *irides versicolor* and *pseudacorus* came into flower this spring in the beginning of June.

The last appearance of migratory birds this year was not noticed.

1807.

Cuculus canorus, heard first April 23.

Lynx torquilla, April 30.

Hirundo rustica, first seen May 1.

Hirundo urtica, the same day.

Hirundo apus, first seen, and numerous, May 16.

Flowers in bloom. *Iris pseudacorus*, June 14. *Papaver somniferum*, the large white variety, July 2.

1808.

Hirundo rustica, first seen April 18. From the 24th to the 29th of the same month, no swallows were to be seen; the weather being cold, with north wind, they afterwards became numerous.

Hirundo urtica, seen first May 1.

Lynx torquilla, the same day first heard.

Hirundo apus. This species first appeared, and was abundant, May 14. It was on the 21st of this month I saw the lambent electric light about the leaves of plants at eventide, described in my "Researches about Atmospheric Phaenomena," note to chap. iii. § 3. The following was the order in which plants flowered this spring and summer. *Iris Germanica*, June 3. *Papaver orientale*, the monkshood poppy, 7th. *Scilla peruviana*, and *Iris lurida*, 10th. *Iris pseudacorus*, 14th. *Papavera dubium*, *Rhoeas*, *hybridum et Argemone*, 25th. *Helianthus annuus*, July 28.

LATEST APPEARANCE OF MIGRATORY BIRDS IN 1809.

Hirundo apus, August 14. Sparrows, *fringillae domesticae*, have begun to congregate some time past, and to fly about in flocks. Martins begin to congregate.

Hirundo rustica, seen till middle of October.

Hirundo urbica disappeared shortly after.

FIRST APPEARANCE IN 1809.

Hirundo rustica. On the 29th of January, during the great floods in the marshes, by which even the bridge at Hackney brook was inundated, a single swallow appeared. The bird did not appear again till April 24.

Hirundo urbica seen by me May 9. I believe, by other people, a few days sooner. Both species became numerous on the 13th. Early in May, I saw numbers of torpid bats in Wokie Hole, near Wells. The *papauer orientale* flowered this spring May 17, and *scilla Peruviana*, and *tragopogon polyfolium*, June 11. *Papauer somniferum*, many coloured varieties, June 22.

On the 4th July I saw the swift, *hirundo apus*, flying aloft during a hard thunderstorm. Last appearance, unnoticed.

LATEST APPEARANCE IN 1809.

Hirundo rustica, October 3; a straggler on the 11th.

Hirundo urbica, October 16. Flocks of wild ducks flying over the marshes on the 20th.

EARLIEST APPEARANCE IN 1810.

This was a mild spring; frogs were abundant, and the snowdrop, *garanthus nivialis*, was in flower Feb. 4.

Hirundo rustica. A straggling swallow, said to have been seen in the middle of March. I saw this bird on the 20th April.

Hirundo urbica, seen the same day, April 20. This was at Plaistow, near Westham. On the 21st the swallows appeared at Hackney. This became frequent toward May. They are said to appear earlier over marshes and near rivers, than more inland. Martins were numerous long before they were seen about their nests.

Lynx torquilla, the wryneck, April 21.

Hirundo apus first appeared May 19. These birds were not frequent about their old haunts in Hackney Old Church tower till May 25. On the 30th, *papauer Cambricum* was in flower. The *hirundo riparia* is said to have been seen this summer about the eagle pond, Wanstead. I have never myself seen this bird there. It is frequent in Surrey about the sand banks, and also on parts of the Thames.

LAST APPEARANCE IN 1810.

Hirundo apus. This bird, though gone from Hackney sooner, was seen by me at Ely Cathedral on the 19th August.

Hirundo rustica, October 10.

Hirundo urbica, October 10; by some people, later.

FIRST APPEARANCE IN 1811.

Motacilla atricapilla, April 5.

Lynx torquilla, April 8.

Hirundo rustica, April 18.

Motacilla phoenicurus, April 21.

Cuculus canorus, April 23.

Hirundo urbica, second week in May. Owls hoot much.

LATEST APPEARANCE IN 1811.

Hirundo rustica. I last saw this species on the 8th of October: they appeared however, I believe, a little afterwards, though only here and there a straggler.

Hirundo urbica, congregating and abundant on the 8th of October; soon afterwards disappeared.

FIRST APPEARANCE IN 1812.

Hirundo rustica. Edward Forster, jun. to whom I am indebted for much orthorological information, observed this species on April the 15th. They shortly afterwards became common.

Cuculus canorus, first heard April 23.

Hirundo urbica, end of April.

Hirundo apus, the first week in May; not frequent for many days afterwards.

Caprimulgus Europaeus, seen in Epping Forest second week in June; probably arrived a month before.

This spring, the *Scylla Peruviana* flowered June 8. *Papaver orientale*, June 12.

LATEST APPEARANCE IN 1812.

Hirundo apus. This species was seen at Penhurst as late as Sept. 20.

Hirundo urbica, seen late in October.

Hirundo rustica, late in October.

FIRST APPEARANCE IN 1813.

Hirundo rustica, beginning of April.

Hirundo urbica, middle of April.

Hirundo apus, early in May.

LATEST APPEARANCE IN 1813.

Hirundo apus. This species was missed, as usual, in the middle of August.

Hirundo rustica. Stragglers seen as late as October 20.

Hirundo urbica, 21st October.

Having given the above sketch of the earliest and latest appearances at Clapton, of some of the swallows during a few years, I shall conclude by advising the following mode of furthering the inquiry into the winter retreat of swallows in particular, as well as of birds in general. A regular table should be made out annually, from accurate observation, and it should consist of seven or eight columns, as follows: thus,

TABLE I.

1	2	3	4	5	6	7	8
Species of bird.							
Day of appearance.							
Direction and force of wind at the time.							
Previous and supervening currents.							
The state of thermometer.							
The state of barometer.							
Weather and clouds.							
Place of observation.							

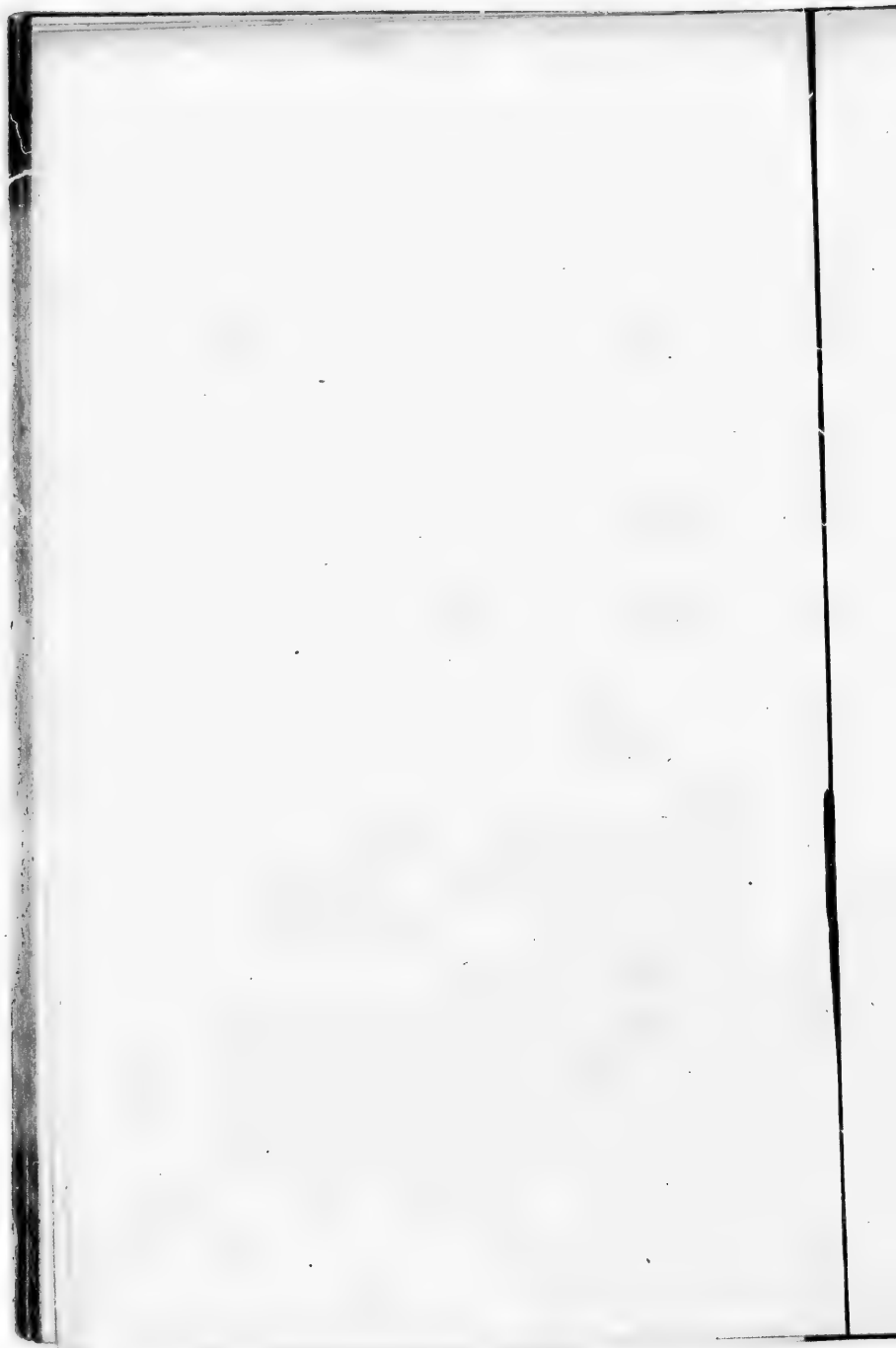
TABLE II.

1	2	3	4	5	6	7
Species of bird.						
When became common.						
Prevailing wind.						
General state of weather and clouds.						
Barometer.						
Thermometer.						
Place of observation.						

Similar tables of the autumnal diminution of their numbers and latest appearances might be made out. By a comparison of many such tables as these, made from observations in different places, we may possibly trace the swallow, in some degree, through its passage, by noticing its successive appearance in places more and more northward from the aequatorial to the polar regions in spring, and backward again in autumn. Such tables, made out in different places, may be communicated to the public in the Philosophical Magazine and other periodical journals.

earliest and
the swallows
advising the
entry into the
country, as well as
the time when they
should be made
and it should
be thus,

4	5	6	7
General state of weather and clouds.			
Barometer.			
Thermometer.			
Place of observation.			



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THOMPS. *Seas. Aut.* l. 841.

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WILL. *Orn. lib.* ii. cap. 3. tab. 39.

WHITE *Nat. Hist. Selb.* vol. i. 223. 293.—ii. 74. 197. 201.

There are many other writers who speak of the Swallow, cited by
Gesner, as Achaëus, Eustathius, Gyraldus, Thrasyllus, Nicol,
Myrepsus, Fuchsius, &c.

GENT. MAG. vol. x. p. 182.—xix. 446.—xxix. 336. 360. xxxi.
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MONTH. MAG. vol. xix. p. 541.—xxi. 415.

NICHOLSON'S JOURNAL, *Nat. Phil.* 1810.

TILLOCH'S *Phil. Mag.* 1813.

As the above Index refers to books in several languages, I annex
the following list of different names for the Swallow*.

* The Saxon, English, Swedish, Danish, German, and Dutch, are
evidently derived from the A. S. Verb, Swelgan, or Swylgan, to swal-
low; from the manner in which this bird devours its prey. The
Greek is supposed to have come either from $\chi\alpha\lambda\alpha\iota\alpha$ $\delta\alpha\mu\acute{\nu}$ quod scil.
labia agit, vel quod $\chi\alpha\lambda\alpha\sigma\epsilon\upsilon$ $\acute{\alpha}\delta\alpha$ labia canit. The derivation of
the Latin (from which the Italian and French are derived) seems
doubtful; Littleton derives it from the Greek. Some say *ab haerendo*,
from its pendulous and adhering nest. The Spanish seems to have
some connexion with the Latin and Greek.

<i>Anglo-Saxon</i>	Swalewe	<i>Greek</i>	γολδρίν
<i>English</i>	Swallow	<i>Latin</i>	Hirundo
<i>Swedish</i>	Svala	<i>French</i>	Hirondelle
<i>Danish</i>	Svale	<i>Italian</i>	Rondine, or
<i>Icelandish</i>	Svala		Rondinella.
<i>Norw.</i>	Sulu	<i>Spanish</i>	Golondrina
<i>Teutonic</i>	Sualeuu	<i>Portuguese</i>	Andorinha
<i>German</i>	Schwalbe	<i>Russian</i>	Lastowitza
<i>Dutch</i>	Zwaluw	<i>Polish</i>	Iaskoika
<i>Laplandick</i>	Swallo	<i>Galic</i>	Gobhlan
<i>Cornish</i>	Tshikuk	<i>Hungar</i>	Fetake
<i>Welsh</i>	Gwennol	<i>Turkish</i>	Garindabu

*Different Names for each particular Species of
Swallow.*

HIRVND0 RVSTICA.

Latin, Hirundo domestica.

French, L'Hirondelle domestique, or l'Hirondelle de Cheminée.

Italian, La Rondine di Camino.

Portuguese, A Andorinha de Chamminé.

Spanish, La Golondrina de Chimenea.

German, Rauch Schwalbe, Fener Schwalbe, Küchen Schwalbe,
Bauren Schwalbe, or Bauern Schwalbe.

Swedish, Ladu Swala.

English, House Swallow, or Chimney Swallow.

Galic, Gobhlan-gaoithe.

Danish, Mark Svale, or Forstue Svale.

Dutch, Boeren Zwaluw.

HIRVND0 VRBICA.

Greek, ἡ αἰὼς αὐτοῦ.

Latin, Hirundo rustica, vel Hirundo agrestis.

French, l'Hirondelle à cul blanc, l'Hirondelle de fenêtre, ou La
Martinet.

Italian, la Rondine da fenestra, or il Tartaro.

Spanish, Golondrina de ventana, or Albion pegneno.

Portuguese, Andorina de janella.

German, Haus Schwalbe, Fenster Schwalbe, Mehl Schwalbe, Kirch
Schwalbe, or Berg Schwalbe.

Dutch, Huis Zwaluw, Wilde Zwaluw, or Lentebode.

Danish, Bye Svale, or Tagskiæg-Svale.

Swedish, Hus Swala.

Norw. Huus Sulu.

English, Martlet, Martinet, Martin, House Martin, or Window Swallow.

Welsh, Marthin.

HIRVNDO APVS.

Greek, "Αἰγύς.

Latin, Cypselus major.

French, le Martinet noir, Montardier, or le Juif.

Italian, Rondone nero, or il Rondone.

Spanish, el Veniejo, Aorejaque, or el Avion grande.

Portuguese, O Gaivao, or O Vencelho.

Russian, Kasatka.

Polish, Iurz, or Iersyk.

Norw. Svart Sulu, Ring Sulu.

Icelandick, Ring Svála.

Swedish, Ring Svála, or Spir Svála.

Danish, Muur Svale, Steen Svale, Kirk Svale, or Söe Svale.

German, Mauer Schwalbe, Stein Schwalbe, Thurm Schwalbe, Kirch Schwalbe, or Speyer.

Dutch, Gier Zwaluw, or Steen Zwaluw.

English, Swift, Black Martin, Black Swallow, Squeaker, Deviling, or Chriek Owl.

HIRVNDO RIPARIA.

Anglo-Saxon, Stæth Swalewe.

Welsh, Gwennol y glennydd.

Galick, Gobhlan-gainbhich.

German, Ufer Schwalbe, Wasser Schwalbe, Strand Schwalbe, or Rhein Schwalbe.

Dutch, Oever Zwaluw, Aard Zwaluw, or Zand Zwaluw.

Danish, Dig Svale, Jord Svale, Klint Svale, or Solbakke.

Norw. Sandrønne, Dig Sulu, Strand Sulu, or Sand Sulu.

Swedish, Strand Svála, or Back Svála.

Russian, Strisch, or Granatotshka.

Polish, Grzebielucha.

French, l'Hirondelle de rivage.

Italian, Rondine riparia.

Spanish, Golondrina de ribera.

English, Sand Martin, Bank Swallow, Bank Martin, or Shore Bird.

Armen. Choll.

FINIS.

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Shore Bird.

